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ORIGINAL ARTICLES.

THE DETERMINATION AND TREATMENT OF HYPERMETROPIA.

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BY W. FRANKLIN COLEMAN, M.D., M.R.C.S., ENG.

PROFESSOR OF OPHTHALMOLOGY AND OTOLOGY, POST-GRADUATE MEDICAL SCHOOL OF CHICAGO.

Though I have nothing novel or startling to announce, still, for the sake of discussion of a vexed question, I introduce this subject. How close and general that classical writer, Donders, considers the relation of asthenopia to hyperopia is evident from the following: "It is a great satisfaction to be able to say that asthenopia need now no longer be an inconvenience to any one. The discovery of the simple fact that asthenopia is dependent on the hypermetropic structure of the eye pointed out the way in which it was to be obviated. Could it be otherwise than that, with the correction of the hypermetropia by means of convex glasses, its resulting asthenopia must also disappear?"

While this grand discovery of hyperopia and its correction by Donders has, perhaps more than aught else, accomplished much for the relief of eye-strain, yet we do not find in the correction of hyperopia such a universal panacea as the above would indicate—for asthenopia may occur with any or no error of refraction, and require quite other treatment than convex glasses. However, hyperopia is so prevalent a source of weak sight that no one will question the importance of its accurate determination as a guide to treatment.

There are three questions I wish particularly to introduce and would like to have especially discussed:

1. Is it necessary to paralyze the accommodation in order to prescribe the most suitable glasses?

2. Can the accommodation be completely paralyzed by homatropine?

3. How much of the hyperopia should be corrected with glasses?

My answer to the first question would be, yes; to the second, I think not; to the third, from .5 to 1 D. less than the total if the glasses are to be worn constantly, and the total if they are to be worn for near vision only.

The first question, judging from my own experience, needs little discussion. He, however skilful, who prescribes glasses for hypermetropia by the aid of the ophthalmoscope and test glasses without paralyzing the accommodation will, in my opinion, make many serious mistakes. My impression is most oculists entertain the same view. On the other hand, such men as Hasket Derby, Strawbridge, etc., are (to my knowledge) in the habit of testing and of prescribing with the accommodation active.

Donders says it is seldom necessary to employ mydriatics for the determination of hypermetropia, but it is justifiable for the more accurate study of the connection between manifest and latent hypermetropia. Juler writes: "From the age of 20 to 30 a mydriatic can often be dispensed with—after the age of 30 mydriatics are seldom necessary."

In answer to our second question it may be said many oculists (among them Drs. Agnew and Webster), have given up the use of homatropine, deeming it insufficient for complete paralysis, and have returned to the use of atropine. On the contrary, members of this Society express themselves as satisfied with the use of homatropine in prescribing glasses. Dr. Gradle told us that, after a series of experiments, he concluded complete paralysis could be produced with homatropine.

To the same conclusion has Dr. C. A. Oliver (Philadelphia) come after extended experiments. He says: "The utmost loss of accommodation occasioned by the single instillation of $\frac{1}{20}$ gr. of homatropine takes place in thirty-two minutes, and if, at the time of the utmost action of $\frac{1}{20}$ gr., the $\frac{1}{6}$ gr. was instilled, complete paralysis was established in fifty-four minutes, and remained stationary more than thirty minutes. This allows of the accurate testing of ametropia."[1]

Juler, in mentioning the above results, does not give the method of Dr. Oliver's experiments, so we are not aware whether, after homatropine, atropine was used as a test of complete paralysis, or upon what grounds Dr. Oliver bases his con-

[1] Since writing the above Dr. Oliver has kindly favored me with a letter stating the conditions of his experimental work with hematropine. Ten young eyes were selected, "one of which was emmetropic, and the remaining nine most carefully and recently corrected by atropia, and thus, as it were, in a quiet emmetropic state. This fact renders the exact experimental and the ordinary clinical results far different. No one has been more fully aware . . that homatropine cannot be made to supplement in any way the use of atropia in the proper correction of errors of refraction than myself."

clusions. I have found in several instances the glasses prescribed under homatropine as commonly used, viz.: grs. viij aq. ℥j instilled three to four times in an hour before testing, unsatisfactory, and have obtained a greater degree of ametropia, and more satisfactory results, with atropine, so that I have come to distrust the finding with homatropine and, when possible, substitute atropine.

Dr. Hotz uses in testing a 4 per cent. solution of homatropine, with which he expresses himself satisfied. One minim of this solution instilled twice in one half hour will, according to Dr. Oliver, produce complete paralysis of accommodation in fifty-four minutes. Yet I have frequently used a 4 per cent. solution of homatropine from twice to four times in an hour, and by the subsequent use of atropine determined accommodation had not been completely abolished, for a greater degree of hyperopia appeared under the latter.

To return to our question: Is it necessary to paralyze the accommodation in order to prescribe the most suitable glasses? Formerly my practice was to test and prescribe with the accommodation active, since this is the condition of near vision. With greater experience the result of such a practice has been frequently observed to be unfavorable, and for some time past I have, as a rule, used atropine. Out of many cases which might be cited, two will be sufficient to illustrate the discrepancy between the results of testing with and without accommodation:

1. C. H. H., æt. 11, has had symptoms of asthenopia for one year. With accommodation active, R. V. + 60 C., 90° = $\frac{20}{40}$; L. V. + 60 C., 90° = $\frac{20}{40}$. Under atropine, R. V. + 16 = $\frac{20}{40}$; L. V. + 16 = $\frac{20}{40}$. Glasses + 20 gave perfect relief.

2. Mrs. Hart, æt. 26; asthenopic. With active accommodation, R. E. + 42, V. = $\frac{20}{20}$; L. E. + 36, V. = $\frac{20}{20}$. Under atropine, R. E. + 30 + 60 C., 105° V. = $\frac{20}{20}$; L. E. + 20 + 60 C., 90° V. = $\frac{20}{20}$. These latter glasses afforded perfect relief after the former had been tried and failed.

To revert next to our second question: "Can the accommodation be completely paralyzed by homatropine?" Tweedy found (*Lancet*, 1880) a solution of homatropine (grs. iv. aq. ℥j) produce total paralysis of accommodation. Schell (*Specialist and Intellig.*, Philadelphia, 1883) says a 3 per cent. solution produces paralysis of accommodation in half an hour.

I will cite the following sixteen cases tested by myself, first with homatropine grs. viij to grs. xx in aq. ℥j, and subsequently with atropine, grs. iv aq. ℥j., in proof that the former does not produce complete paralysis, and does not furnish reliable indications for prescribing.

Case 1.—Miss G., æt. 16. The right eye, under homatropine grs. viij aq. ℥j, accepts — 36 C. 180° (1); under grs. xx aq. ℥j + 36 C. 90° = 72 (2); under atropine grs. iv aq. ℥j + 36 C. 90° (3). The 4 per cent. solution of homatropine was applied twice in half an hour. The atropine was applied five times during two days. By comparison we notice the 4 per cent. solution of homatropine released .5 D. more of the accom. than the 1.7 per cent., and the atropine released .5 D. more than the 4 per cent. of homatropine +. That is, (1) + 72 = (2); (2) + 72 = (3).

Case 2.—Mrs. H., æt. 26. Complains of asthenopia and nictitation for years. Has given up reading during the past year, as any attempt would cause headache. Homatropine grs. viij aq. ℥j four times in one hour. R. E. + 30 = $\frac{20}{20}$; L. E. + 20 = $\frac{20}{20}$. Glasses + 36 afforded relief for a time. Seven months later Mrs. H. reports any use of her eyes causes redness and smarting. After atropine grs. iv aq. ℥j t. d. for three days, R. E. + 30 + 60 C. 105° = $\frac{20}{20}$; L. E. + 20 + 60 C. 90° = $\frac{20}{20}$. These glasses gave perfect comfort in reading.

Case 3.—J. T., æt. 10 years. Homatropine grs. viij aq. ℥j was applied four times in twenty-four hours, and then four times in one hour, and the refraction tested. The R. E. accepts + 8 C. 105°; the L. E. + 10 C. 75°. A subsequent testing, under atropine three days, gave for the R. E. + 7 C. 105°, and the L. E. + 7 C. 70° + 60.

Case 4.—M. T., æt. 26. Homatropine (grs. viij) ten times during three hours. R. E. + .75 D. + 1 D. 60°; L. E. + 1.25 D. + 1 D. 120°. After atropine (grs. iv) six times in twenty-four hours, R. E + 1 D. + 1 D. 60°; L. E. + 1.25 D. + 1 D. 120°.

Case 5.—C. N. Homatropine (grs. viij), ten times in one hour. R. E. + .5 D. V. = $\frac{20}{20}$. Thirty-five minutes after atropine (grs. iv), was once applied, R. E. + 1 D. V. = $\frac{20}{20}$.

Case 6.—E. H., æt. 12. The R. E., under homatropine, shows H. = $\frac{1}{20}$; under atropine $\frac{1}{16}$. The L. E. under the former $\frac{1}{16}$, the latter $\frac{1}{24}$. The homatropine was used (grs. viij) four times in an hour, the atropine three times in twenty-four hours.

Case 7.—Dr. X. tested Dr. Y. after using homatropine (grs. viij) three times in half an hour, and prescribed R. E. + .75 D. 55°; L. E. + 1 D. These glasses were unsatisfactory. Dr. X. again tested with homatropine and prescribed R. E. + .75 D. + .75 D. 55°; L. E. + .75 D. + .75 D. 100°. These glasses gave more but imperfect relief. I found, after atropine three times a day during three days, R. E. + .75 D. +. 6 D. 75°, V. = $\frac{20}{20}$; L. E. + 1 D. + 1 D. 90°, V. = $\frac{20}{20}$. After using these glasses for months Dr. Y. says he can read for two or three hours without any inconvenience.

In the following cases a 4 per cent. solution of homatropine was used, followed by atropine (grs. iv aq. ℥j).

Case 1.—Miss F., æt. 25. Homatropine three times in one hour. R. E. accepts + 72 + 60 C. 90°; L. E. accepts + 72 + 48 C. 90°. After at-

ropine t. i. d. for three days R. E. accepts + 48 + 60 C. 90°; L. E. accepts + 48 + 36 C. 90°.

Case 2.—Mrs. H., æt. 28. Homatropine four times in two and one half hours. R. or L. V. + 60 = $\frac{20}{20}$. Atropine t. i. d. for two days, R. V. + 48 = $\frac{20}{20}$; L. V. + 30 = $\frac{20}{20}$.

Case 3.—A. B., æt. 12. Homatropine four times in two hours. R. V. + 24 C. 90° = $\frac{20}{40}$; L. V. + 24 C. 90° = $\frac{20}{40}$. Atropine t. i. d. for four days. R. V. + 24 + 36 C. 90° = $\frac{20}{40}$; L. V. + 36 + 30 C. 90° = $\frac{20}{40}$.

Case 4.—R. A., æt. 9. Homatropine three times in one hour and 20 minutes. R. V. + 1.25 D. = $\frac{6}{6}$; L. V. + 1.50 D. = $\frac{6}{6}$. Atropine t. i. d. for three days. R. V. + 1.25 D. = $\frac{6}{6}$; L. V. + 2 D. = $\frac{6}{6}$.

Case 5.—J. B., æt. 13. Homatropine applied four times in an hour, and eyes examined twenty minutes later. R. V. + 16 + 36 C. 120° = $\frac{20}{20}$. L. V. + 30 = $\frac{20}{20}$. Atropine t.i.d. for three days. R. V. + 12 = $\frac{20}{20}$. L. V. + 18 = $\frac{20}{20}$.

Case 6.—Mrs. H., æt. 25. Homatropine three times in one hour. R. V. + 60 C. 90° = $\frac{20}{20}$. L. V. + 72 = $\frac{20}{20}$. Atropine t.i.d. for three days. R. V. + 60 + 60 C. 90° = $\frac{20}{20}$. L. V. + 36 = $\frac{20}{20}$.

Case 7.—M. T., æt. 10 years. Had been examined under a mydriatic seven months previously by an oculist, who prescribed glasses + 15 for constant use. These were fairly satisfactory for five months, but during the past two months the letters would blur and head ache in ten minutes' reading. Under homatropine four times in an hour and a half R. V. + 42 = $\frac{20}{20}$. L. V. + 36 = $\frac{20}{20}$. Under atropine t.i.d. for three days R. or L. V. + 36 = $\frac{20}{20}$. At 20' adduct. = 8°, abd. =6°: V. d = equilibrium. With accom. R. or L. V. + 36 = $\frac{20}{20}$ +. These glasses gave perfect comfort and were prescribed for constant use.

Case 8.—A. H., æt. 16. Convergent strabismus and choroiditis disseminata. After homatropine four times in one hour R. V. + 9 = $\frac{20}{50}$, L. V. + 9 = $\frac{20}{200}$. After atropine instilled t.i.d. for three days R. V. + 8 = $\frac{20}{50}$, L. V. + 8 = $\frac{20}{100}$.

Case 9.—S. E. A., æt. 12 years. With homatropine four times in two hours R. or L. V. + 36 = $\frac{20}{20}$. With atropine t.i.d. for three days, R. or L. V. + 24 = $\frac{20}{20}$.

An analysis of the first seven cases in which homatropine grs. viij aq. ℥j was used followed by atropine grs. iv aq. ℥j, demonstrates, in case 4, .25 D. more hyperopia under the latter. Cases 1, 5, 6, .5 D. more hyperopia. Case 2, an astigmatism of .6 D. in each eye was developed. Case 3 shows an added .6 D. ast. in R. eye and 2 D. ast. + .6 D. hyperopia in L. E. Case 7 shows a change of 20° in the axis of the cyl. in R. E., and an increase of H. 25 D. + ast. .25 D. with axis of cylinder changed 10°.

To summarize the last nine cases. There was developed under atropine an increase of hyperopia, as compared with the findings under homatropine, as follows: In two eyes .15 D.; in two .25 D.; in four .5 D.; in one .6 D.; in three .75 D.; in one 1 D.; in one 1.5 D. In one eye + 1 D. astigmatism disappeared. In one there was .25 D. more astigmatism; in one .33 D. less; in one .5 .D less. In two eyes the refraction remained the same under atropine.

3. How much of the hyperopia should be corrected? As to this question the answer exhibits a befogging diversity of opinion. Donders says: "In very young persons in whom we may expect much latent hypermetropia, and in those who are somewhat more advanced, for example, at 30 years of age, where the range of accommodation has undergone much diminution, glasses which correct only the manifest hypermetropia are scarcely ever sufficient." Again, "If we know Hm. and Hl. we give glasses which neutralize the manifest; and about one-fourth of the latent hypermetropia, in general they will answer the purpose, either immediately or after a few weeks." In their systematic works Carter, Wells, Schweigger and Williams give practically the above formula of Donders for prescribing glasses. Mittendorf, Wolf and Nettleship say, give full correction in children, while Roosa advises less than full correction, especially in young people. DeWecker advises a correction of less than Hm. in children with high hypermetropia. Landolt, in his splendid recent work, directs glasses for hyperopia of a strength inversely to the range of accommodation. Noyes' rule is full correction if the total H. = $\frac{1}{12}$ or more, and correction of the manifest H. only if the total = $\frac{1}{16}$ or less. DeWecker and Nettleship correct only Hm. in adults. Wolfe (Glasgow) and Lang (London) give full correction, as a rule, and G. T. Stevens recommends it. Juler writes, "Deduct half a diopter from the Ht. when the glasses are to be worn constantly, and give full correction when they are to be worn for near vision." This, in my judgment, is the best rule, of any quoted, to follow. Instead of adopting any method based upon the age of the patient, or the degree of the hyperopia, it is much more simple to include all cases in one formula, as does Landolt, who considers the static and dynamic (accommodation) refraction as one whole, and says, "The convex glasses ought to correct the whole of the refractive defect and disengage a certain quota of accommodation, which will help the person to keep up his ocular work the desired length of time." This "quota" Landolt considers from $\frac{1}{4}$ to $\frac{1}{3}$. In other words, he thinks $\frac{2}{3}$ to $\frac{3}{4}$ of the total power of accommodation can be comfortably used for continuous work. Then his rule in practice amounts to this: Allow $\frac{2}{3}$ to $\frac{3}{4}$ of the accommodation to be used towards the correction of the static refraction and make up the deficit by adding a convex glass. To take one of his examples: Suppose a hyperope of 7 D. has accommodation of 9 D.; with what glass will he

most conveniently work at 3 D.? In order to see at 3 D. a hyperope of 7 D. requires 10 D. of refraction. For this he requires a glass of 4 D.; the 6 D. (⅔ of 9 D.) of accommodation allowed, making up the deficit (in total 10 D.).

In designating the law of Landolt for prescribing glasses as the "most simple," I did not intend to subscribe to it, and in practice do not. Clinical experience will, I think, furnish abundant evidence that ⅔ to ¾ of the accommodation *cannot* be used without asthenopic symptoms resulting. Otherwise very few hyperopes would suffer from asthenopia—as can be easily illustrated from Landolt's own table of "amplitude of accommodation." His table gives 14 D. to 7 D. of accomodation from the age of 10 years to 30. From the above it follows the eye could use 9.33 D. to 4.66 D. (⅔ of 14 D. to 7 D.) of accommodation for continued effort (Landolt). Consequently, for reading at 12 in. (3 D.) there would be 6.33 D. to 1.66 D. (9.33 D.—3 D. to 4.66 D.—3 D.) of accommodation, which could be utilized (without asthenopia) to correct hyperopia.

This, I think, does protest too much, for we cannot believe that between the ages of 10 and 30 a hyperopia of 6.33 D. to 1.66 D. may exist, with the rarest exception, without symptoms of asthenopia.

Again, to compare the emmetrope with the hyperope, say at the age of 20 years: Suppose each has 9 D. of accommodation; the emmetrope reads at ⅓ meter with 3 D. of accommodation (⅓ of his total), while a hypermetrope of 3 D. would be compelled to use at the same distance (⅓ meter) 6 D. of accommodation (*i. e.*, ⅔ of his total). My contention is, the 3 D. (total) of hyperopia should be corrected with a glass of 3 D., to make the eye equal to the emmetrope in refraction. I do not forget Donders' objection to the above, that the patient cannot at once (with full correction) relax the total amount of accommodation, and therefore accommodates (with the glass) for too near a point, and accommodative is changed into muscular asthenopia. But we know that Donders himself recommended, and now the majority of oculists prescribe glasses stronger than the manifest hyperopia, and that the eye soon adapts itself to these glasses which are changed from time to time for stronger. The principle remains the same if full correction is given at once, *i. e.*, gradual relaxation of the latent spasm of accommodation. Since there are many persons who cannot, or will not, consult an oculist a second time, much less a third or fourth, in regard to changing their glasses, I think it is best to give full correction and direct them to use the glasses by graduated exercise, and to hold the book 15 inches distant, assuring them the eyes will in time adapt themselves to the glasses, which will then not require to be changed until the age of presbyopia. If without putting the accommodation at rest, we prescribe glasses, or if we atropinize the eyes and give only partial correction, it may happen (however admirable our intention) we will benefit the patient not more or less than might the happy-go-lucky testing of the average optician (whose exclusive prerogative, the public think, it is to fit glasses); the jeweler who displays (with other precious stones) pebbles which he can especially recommend as most cooling to the eyes, or the general merchant at the cross-roads, who is compelled to furnish all sorts of hardware.

I will report only two cases as examples of the result of total correction:

S. E. A., æt. 12. Can read only five to ten minutes without headache and other symptoms of asthenopia. Under atropine (grs. iv ad. ℥j) t.i.d. for three days. R. or L. V. $+24 = \frac{20}{20}$. Sps. + 24 prescribed, with which he reads by the hour comfortably.

Daisy B., æt. 10. During the past six months only very large type could be read, and even it tired the eyes very much in a very short time. After atropine t.i.d. for three days the R. E. accepted + 4 D. + .75 D. 90°; the L. E. +4 D. +3 D. 90°. With these glasses there has been (during a three months' trial) no inconvenience in reading.

The favorable results of treating the majority of asthenopes by the correction of their hyperopia with convex glasses are too familiar to make the citation of their cases of any special interest.

A few cases will be reported in which muscular insufficiency being present, the symptoms did not yield simply to the correction of the refraction.

The subject of muscular anomalies and their treatment is too large to fully consider in this paper. I am convinced we too often neglect to test the ocular muscles in examining asthenopic patients, and thereby fail in many cases to relieve.

Miss McG., æt. 37. Seamstress. Complains of pain in the eyes during the past year whenever she read or sewed, and she has suffered a good deal from headache. With accommodation. R.V. $= \frac{20}{60} = 5$ J. 12″ + 36 C. 90° $= \frac{20}{30}$; + 24 + 36 C. 90° = 1 J. 10″. L. V. $= \frac{20}{30} = 3$ J. 12″ + 42 $= \frac{20}{20}$; + 18 = 1 J. 10″. At 21′ adduct. = 10°; abd. = 6° at 12″ add. = 14°; abd. = 10°; V. d. = 4°. Converge. Under homatropine, grs. viij ad. ℥j. R. V. +36 + 36 C. 90° $= \frac{20}{30}$; L. V. + 24 $= \frac{20}{20}$. Glasses were prescribed. R. E. + 24 + 36 C. 90° ⊃ prism 2° base in. L. E. + 18 ⊃ prism 2° base in. Ten months later Miss McG. reports she is much relieved, being able to sew all day, with glasses, but cannot read in addition. When in good condition the eyes feel pretty well, but at times they pain and smart.

I regret not having used atropine, instead of homatropine, since Miss McG. will not now take time for examination with atropine, and is imperfectly relieved.

Pain in the eyes and head relieved by sphero-

abducting prisms for near vision, and sphero-adducting prisms for distant vision.

Mrs. E., æt. 32. Is neurotic, and of a neurotic family. Has suffered from asthenopia for 12 years. During the past year she has used her eyes only to write and read letters and read familiar music. Has a dull pain in the eyes and head much of the time. For two years (excepting two weeks) has used homatropine (grs. ij ad. ℥j) every evening. Without it the eyes ached constantly. With it, and the avoidance of fatigue, the eyes were pretty comfortable. Six years ago an oculist prescribed —under atropin—a sphero. cyl. glass for each eye. It is doubtful whether they gave relief at first. At the end of a year the eyes were worse. Five years since another skillful oculist examined the eyes—with active accommodation—and gave +60 for each eye. He directed exercise of ocular muscles, by converging for a near point. This gave pain and did not benefit. With the + 60 glasses she can read only ten minutes. The strength of the recti had not been tested. With active accommodation I find the R. E. + 72. V. = $\frac{20}{20}$; L. E. V. = $\frac{20}{20}$. Refuses a glass. At 20′ add. = 24°; abd. = 2°; V. d. = equilibrium 12″ With atropine vertical diplopia with prism shows R. E. + 36. V. = $\frac{20}{20}$; L. E. + 6° divergence. 36 C. 90°. V. = $\frac{20}{20}$ at 20′ add. = 24°; abd. =3°; V. d. = equilibrium with sps.. Glasses were prescribed, to be worn for distance. R. E. + 36 ⌒ prism 2° base out; L. E. 36 C. 90 = ⌒ prism 2° base out; for reading R. E. + 36 ⌒ prism 2° base in; L. E. + 36 C. 90° ⌒ prism 2° base in. Galvanism had been applied to the eyes, but it caused pain and was given up. It had been tried previously, at home, and always caused pain in the head and eyes. Mrs. E. returned in six weeks and stated she had given up the use of homatropin, had worn the glasses for distance and reading, and when she felt well could read three to four hours a day. She had had no pain in the eyes and little in the head. At 20′ add. = 26°; abd. = 5°. V. d. = equilibrium. Advised to use gymnastic prisms five minutes once a day. Three months later Dr. E. wrote: "Mrs. E. saw Dr. Moore before she left New York. He was convinced convergence was so excessive as to give occasional strabismus, although at 20′ the Graefe test gave equilibrium. He advised tenotomy—full. The result has been very great improvement, and from her increased ability to use her eyes and her absence of headache, I think and hope it will be a cure.

The above result of tenotomy is very interesting and satisfactory. It demonstrates (as Dr. Noyes has pointed out) that the muscular findings by distant testing, are a much more reliable guide to treatment than the findings for the near point. I cannot say whether the gymnastic prisms were used by which means the real relative strength of the external and int. recti would have been more evident when Dr. Moore tested. Upon referring to my first testing it is noticed that at 20 feet there is facultative divergence of only 2° with dynamic equilibrium, while with the Graefe dot and line test at 12 in. there is dynamic divergence of 6°. Subsequently (3d testing) at 20 feet prism of abduction equal to 5° while ad. = 26°.

Miss M. S., æt. 15 years, an undeveloped delicate girl, who for years had suffered constantly from headache and pain in the eyes. The family physician had been able to give but little relief, so sent the patient to me to have her eyes examined. Miss S. says any attempt to read produces pain in the eyes and brows, flowing of tears and blurring of the type in a few minutes. R. E. V. = $\frac{20}{40}$ = 1 J. 12″ + 48 = $\frac{20}{40}$ L. E. V. = $\frac{20}{40}$ = 1 J. 12″ refuses glass. At 6 feet Ad. = 13°: Ab. = 10°: Vd. = Div. 8°. Under atropine R. E. + 36 C. 90° V. = $\frac{20}{30}$: L. E. + 30 C. 90° V. = $\frac{20}{30}$. Upon fixation within 12 in. with either eye the fellow eye diverges. Advised arsenic and fat food. After application of galvanism daily for two weeks, the eyes were less sensitive to pressure but the pain was not relieved.

A second testing under atropine gives R. V. + 48 = $\frac{20}{30}$: L. V. + 48 = $\frac{20}{30}$. With accom. R. or L. eye accepts + 48. Directed to wear constantly for distance + 48 ⌒ prism 2° base out (each eye). Read with these glasses and with + 36 on alternate days. Commencing with five minutes three times a day, and increase the time one minute daily. Three weeks later, Miss S. can read twenty-seven minutes comfortably with either pair of glasses. Directed now to try the spheroprisms with *base in* alternately with + 36 and continue to increase the reading time as before.

After six weeks, Miss S. reports she has reached 54 minutes with comfort, and reads equally well with either pair of specs. The headache is unrelieved. At 20′ ad. = 24°: Ab. = 6°: V. D. = *Conv.*

Spheroadducting prisms (+ 48 ⌒ 2°) were given for distance and sphero, abducting (+ 48 ⌒ 2°) for reading, and prisms 6°, 8°, 10° and 12° to be used once daily for five minutes, with the light (as object) at 20 feet. Miss S. returned in six months. Says she can read as long as she wishes now without any inconvenience, and the headache is very much less. Her eyes now accept as the best reading glasses, R. or L. + 72 + 60 C. 90° ⌒ prism 2°, base in. The adducting prisms for distance cause headache and are discontinued.

Mrs. S. reports seven months later that her daughter is from home at school, has no trouble in using her eyes for her studies, and rarely suffers from headache.

The good result in this case I attribute to graduated exercise in reading and to the use of gymnastic prisms. Since spherical glasses, sphero-adducting or sphero-abducting prisms could be

worn equally well it is not likely the prisms afforded much relief in reading.

Spasm of acommodation and asthenopia in a patient with total hyperopia = $\frac{1}{16}$, relieved only after the use of atropine for nine and a-half months.

M. B., æt. 9 years, since commencing to attend school at the age of six, has held her book very near, and now reads habitually at four inches. The reading of two or three sentences produces pain in the eyes, brows and jaws.

With accommodation R. V. = $\frac{20}{30}$ = 1 J. 4 to 12 in. + 48 = $\frac{20}{20}$ L. V. = $\frac{20}{40}$ 1 J. 4 to 7 in. + 60 C. 90° = $\frac{20}{20}$. After atropine t.i.d. for three days, R. E. + 20, V. = $\frac{20}{30}$, L. E. + 24, V. = $\frac{20}{20}$. R. specs + 36 for reading. Two weeks later can read two pages before eyes tire. R. + 24, specs to be worn constantly. Four and a-half months subsequently Maud reports there has been no trouble in reading at 15 inches, and she liked the glasses for distance as she could see farther and had no headache, but for two weeks past the eyes have again troubled her in reading. There is again spasm of accommodation. R. Repeat atropine t.i.d. Two weeks later total H = $\frac{1}{16}$ R. or L., R. atropine once daily. Four and a-half months, later the atropine had been discontinued for weeks and reading could be done comfortably without glasses. Advised to continue the use of glasses to prevent relapse.

I think the moderate continued exercise of the internal recti by the wearing of abducting prisms for distance, is much more effectual than electricity, or than the spasmodic gymnastic use of prisms, in relieving muscular insufficiency. Galvanism I have found lessens very much the pain and tenderness of the eyes which accompany asthenopia, but electricity has appeared to me to accomplish little in strengthening ocular muscles.

Gradually increasing exercise of the eyes seems to be as much indicated in asthenopic hyperopes who are not relieved at once with glasses as in emmetropes with weak sight, for whom Dr. Dyer used it with such signal success.

163 State Street.

HEPATIC INCOMPETENCE IN CHILDREN.

Read in the Section on Diseases of Children, at the Thirty-ninth Annual Meeting of the American Medical Association, May, 1888.

BY M. P. HATFIELD, M.D.,

PROFESSOR OF DISEASES OF CHILDREN IN CHICAGO MEDICAL COLLEGE.

A type of patient, very familiar to the physician interested in pædiatrics, is the well-known, sallow, neurotic anorexic child, the torment of herself, parents and the physician. She—for it is more frequently a she than a he—is as a rule dyspeptic, constipated, generally disordered in secretion and yet without demonstrable lesions.

What ails these children? If there happens to be a feverish exacerbation during the day, malaria is usually charged with their infirmities, but quinine aggravates their troubles instead of removing them. Gastric catarrh and the so-called bilious attacks are met with in a certain proportion of these cases but by no means in all; nor does the treatment of the gastric catarrh alone cure these children. General tonics, especially the feruginous, make matters worse, and the most careful physical examination fails to reveal anything except in a very few cases where moderate tenderness and enlargement of the liver may be detected. Beyond dispute these children are not well, but there is no word that will explain their condition, unless we fall back on that much abused term "biliousness." But bilious they are not, in the sense that there is an excess of bile, or its reabsorption to any considerable degree—although there may be sallowness, furred tongue, and stools inclined to a clay color.

Other of their symptoms may be found in Murchison's description of lithæmia, but this is partial and only embraces those cases in which there is a copious deposit of uric acid or the urates in the urine, due to imperfect formation of urea.

Hepatic incompetence is a better term, for it includes not only imperfect nitrogenous transformation, but all other deficiency in the work of the liver. The name has been adopted in regard to the work of the kidneys, and something of the kind is needed to scientifically group together not a few of the morbid conditions of early childhood very unlike in their clinical manifestations, and yet in the, writer's opinion, all due to imperfect work on the part of the liver.

Etiology.—In these days of bacteriological laboratories and microbes many and various, it takes some moral courage to insist that there is such an old fashioned organ as the liver and that it may become functionally deranged without the provocation of any bacillus. Such I believe is frequently the case in children with whom organic diseases of the liver are rare, but functional exceedingly common, These functional disturbances may be conveniently grouped into three divisions: Icteric (bilious), lithic, and toxic, according to the prominence of certain groups of symptoms, corresponding to the interference with the three more important functions of the liver. Very likely there are other and fully as important ones not yet recognized, for the general knowledge of the profession in regard to that much abused organ is hardly better than that of Hippocrates, who steadfastly believed that the liver was the home of the emotions, and that a man became melancholy, or choleric, according as it formed an excess of various kinds of bile. The chemistry of the bile and its action upon digestion have been carefully studied upon the lower animals, but there is yet a woeful lack of knowledge as to the

origin of the various bile salts and pigments, and much dispute as to the part they play in the human economy. The bile pigments, in all probability, are derived from the hæmoglobin of the blood and possess decidedly antiseptic properties —as proven by the intestinal fermentation which occurs when they fail to pass into the alimentary canal. Such intestinal disturbance, clayey stools, disordered peristalsis and greater or less degree of icterics constitute the group of symptoms to which belongs the term *icteric*, or bilious in common parlance, arising from this form of hepatic incompetence.

The second, or lithic, group of symptoms, are those so well described by other writers under the head of lithæmia, that they need no repetition here except to mention that here belong all symptoms referable to the liver's failure to transform albumenoids into (soluble) urea. They are the clinkering of the body's furnace with uric acid and urates with the accompanying gastro-intestinal, renal and cystic disturbances.

Lastly and by no means least in importance are the toxic or toxæmic symptoms due to the failure of the liver to destroy the toxic substances normally formed within the body. This function of the liver—although it might have been inferred from previous experience in toxicology—seems to have escaped the attention of all experimenters previous to Schiff and Lauterbach, of Geneva (1877). They clearly demonstrated that the liver possesses anti-toxic actions, and if the blood is prevented from passing through the liver it acquires toxic properties not unlike those possessed by conia and allied vegetable alkaloids. Later investigators, notably Gauthier, have shown that these poisonous alkaloids are produced by the retrograde metamorphosis of the tissues of the body during life. To distinguish them from the cadaveric alkaloids (ptomaines) they have been named leucomaines, and this sort of hepatic incompetence should be known as leucomaine poisoning, or intoxication; for these leucomaines are toxic, producing death when hypodermically injected into the lower animals. The symptoms produced thereby, so closely resemble the ordinary manifestations of malaria that we are constrained to believe that much of what passes under the name of "dumb ague" is not malarial at all in its origin but is dependent upon the accumulation within the system of these products of decomposition. It is, in short, a variety of septic poisoning, arising from hepatic incompetence, and any form of treatment which fails to take these into account will in so far be found unsatisfactory and disappointing.

Differentiation.—The differential diagnosis of these cases is not difficult if we can but succeed in freeing our minds from the wide-spread belief that hepatic incompetence cannot exist without clayey, or light colored stools. As has already been said, they may, or may not be present, for certain forms of hepatic incompetence may exist with normally colored fæces and, *per contra*, the liver may efficiently perform its work even with a clay colored stool, due to other causes than hepatic incompetence. Neither does hepatic incompetence require that the liver should be congested and tender, though beyond disputed chronic congestion of the liver eventually leads to incompetence by fibroid contraction and degeneration of its atrophied cells. Nor, again, is it always true that an apparently enlarged liver will produce incompetence, for as Eustace Smith has shown: "the liver is apt to vary in size from natural causes in young children; some having exceptionally short chests which cause the liver, without enlargement, to be displaced a finger's breadth or so below the ribs." Bearing, however, these sources of error in mind, the diagnosis of hepatic incompetency ought to be neither difficult nor uncertain, whether it be attended with the distressing vomiting and purging of a bilious attack or the chronic headache and feverish exacerbations of slow leucomaine poisoning.

Prognosis depends upon the amount of the hepatic incompetence. If complete, as in acute yellow atrophy, or phosphorus poisoning, the result is inevitably fatal. As it is usually met with, the prognosis is excellent both as regards the life of the patient and restoration to health.

Treatment should be both medicinal and dietetic, largely the latter. Many of these cases originate in errors of diet, and cannot be cured except by a correction of the same. Excess of albuminous and stimulating foods and such, is almost universal with the American child, or leads to engorgement of the hepatic veins and of the liver cells in their immediate vicinity, with subsequent atrophy of same according to Eustace Smith. Such cases cannot be cured except by a careful regulation of diet before hepatic incompetence becomes chronic. Starchy foods, fruits and broths are those which require least assistance from the liver in their digestion, are those which should constitute the bulk of the diet of such children, for whom a diet list should be prepared and rigidly enforced. Where intestinal indigestion appears as a complication, peptonized foods ought to be of value, though as a matter of fact, pepsin and salicylic acid (2 + 1) has in the hands of writers been of more real value, than any form of peptonized food yet tested by him. The salicylic acid conjoined with compound spirits of lavender (B. P.), is also valuable in those cases, attended with the deposit of lithates in the urine as a well-marked symptom, both of the drugs having, in some way, a decided effect upon the excretion of uric acid in a more soluble form.

Old-fashioned biliousness and gastric catarrh

are satisfactorily treated with alkalies and laxatives, preference in these cases being given to calomel, for we substitute in these cases castor oil, magnesia, etc., we only aggravate after temporary relief. As a hepatic stimulant, that is one which increases the flow of bile, without regard to its expulsion, calomel is, however, far inferior to the bichloride, podophyllin, or even benzoate of ammonia. According to Rutherford's experiments one of these should be employed when hepatic incompetence is becoming chronic, and for the relief of migraine, in similar cases the writer has found no one remedy equal in value to antipyrin. The same is also very valuable in those cases attended with high febrile excitement, often the highest met with in children, except pneumonia and scarlet fever. What the exact chemical action of the antipyrin is, I am unable to say. Perhaps we may learn from Dr. Parkhurst's paper, but I am convinced that in some way it assists in the excretion of these toxic leucomaines, to whose private study I invite your personal attention, being convinced that such investigation will yield in the near future valuable scientific and practical results.

DR. CHRISTOPHER thanked the reader for bringing the subject before the Section, and elucidating the pathology of a very frequent and obscure class of cases. He spoke at some length upon a condition to which he gives the name hyper-digestion; a formation of ptomaines and alkaloids of putrefaction in the intestinal tract. If the liver is incompetent to deal with the excess of ptomaines, some of these are carried into the circulation, and produce their peculiar effects through the medium of the central nervous system, like all other alkaloids. Since ptomaines can only be formed from nitrogenous foods, it follows, that in the treatment of these cases, such foods should be withheld.

He was accustomed to use calomel as a preliminary cathartic, and soda phosphate afterwards in the mornings as a hepatic stimulant. Salol, salicylic acid and naphthaline, he employs as intestinal antiseptics. His treatment has proved very satisfactory.

DR. GEO. WHEELER JONES thought the term "hepatic incompetence" a good one. It was more troublesome than other forms of indigestion in children. He used oil of wintergreen with sugar or syrup. It would relieve the acid diarrhœa. It is not a chemical compound, and he preferred its use to salicylate of soda. He also said that bichloride of mercury in minute doses was more persistent, and acted more upon the deeper structures than calomel. Another remedial agent was common salt.

CONTROL OF FEMALE COSTUME.—A physician of Missouri announces that he will not take a female patient unless he can order the costume as well as the medicine.

A RECTAL PLUG. FOR SENN'S METHOD OF INSUFFLATION OF HYDROGEN GAS.

BY A. H. MEISENBACH, M.D.,
OF ST. LOUIS, MO.

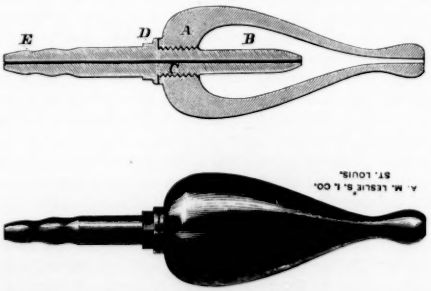
In repeating Dr. Senn's experiments, of insufflation per rectum of hydrogen gas, I found considerable difficulty at times, to prevent the gas from escaping out of the rectum, using the ordinary syringe tip. I found this to be the case in experimenting on dogs, and also on the human cadaver.

Dr. Senn recommends in his paper on "Insufflation of Hydrogen Gas per Rectum," etc., that "an assistant hold the margin of the rectum around the syringe tip."

In order to obviate the inconveniences of an ordinary syringe tip, and do away with the need of an assistant in controlling the margin of the rectum, I devised the herein described rectal plug.

This plug has given great satisfaction, having used it in applying Senn's test in four cases of gunshot wounds of the abdomen which were brought to the City Hospital, and in a case of obstruction of the bowel due to the rupture of a Fallopian pregnancy, where obstruction was produced by an immense coagulum—later case occurring in private practice of Dr. Hornsby, and in which I applied "Senn's Test," demonstrating the value of this measure in diagnosing intestinal obstruction.

In the above applications of Senn's test the plug completely plugged the rectum and effectually prevented the regurgitation of the gas, and allowed the gas bag and plug to be controlled by one person. The plug is made of hard rubber. The annexed cut shows a half size perspective



and sectional view of plug. A represents cone-like plug, with tip similar to ordinary syringe tip. B is a hollow chamber in plug into which extends Tip E, on which is a thread which screws into plug as shown at C. At D on Tip E is a square shoulder and round collar. The square shoulder is for the purpose of allowing a wrench to be used to tighten the tip into plug. Between collar on plug and collar on tip at D a washer is used, so

as to insure perfect air-tightness. The end of Tip E which projects outside of plug is corrugated, so as to easily and tightly fit into rubber tubing from gas bag.

The object of having plug hollow and the tip E project into chamber as shown, is to prevent clogging of the direct communication with the gas bag, when inserting end of plug into rectum, by fæces or mucus which may be in the rectum. Should clogging of tip of plug occur it will not interfere with gas escaping from Tip E into chamber, and can be readily removed or blown out by pressure from gas bag.

I have found that pouring a little sweet oil into chamber, through opening in plug into chamber, in a measure prevents the liability to clogging, as the oil lubricates the sides of opening and facilitates its being readily blown out by pressure from the gas bag.

MEDICAL PROGRESS.

ERYTHROPHLŒIN IN CARDIAC AFFECTIONS.—DR. HERRMANN, in a recent number of the *Wiener Klinische Wochenschrift*, gives an account of experiments which he had performed in the clinic of Professor Drasche in the Vienna General Hospital, on the effect of erythrophlœin on the diseased heart. It was used in cases of compensated and non-compensated failures of the heart, as well as in cases of fatty heart with slight disturbances of circulation. The drug was used in a solution of 0.002 grams of erythrophlœin in 10,0 grams of laurocerasus water, ten drops of this solution being given every hour. In general, the drug was well tolerated, and only in a case of insufficiency of the aorta depending on acute articular rheumatism did the sensation of disgust and great irritation supervene. Retardation of the pulse after the administration of erythrophlœin came on in several cases, and this was particularly true of the case of insufficiency of the aorta after 150 drops of the solution had been given for eight days. The number of the pulse-beats was reduced from 100 to 84 a minute, and in another case of insufficiency and stenosis of the mitral valve, the pulsations decreased from 100 to 68 a minute after the administration of 50 drops of the solution, and during an interval of time from midday till 5 P.M. This, however, was not constant, as in the last mentioned case the number of the pulsations reached 108 a minute three hours later, although the administration of the solution was continued. In another case of insufficiency of the mitral valve with severe palpitations, the drug was administered for twelve days, and it was not until some days later that the frequency of the pulsations sank from 120 to 96 in a minute, and at the conclusion of the experiment it decreased to about 84 beats. As to the effect of the erythrophlœin on the renal function no particular influence could be observed in some cases, whereas in another series of cases the effect was quite striking. In a patient affected with incompetence of the mitral valve the daily quantity of urine, during an interval of twelve days, increased from 800 to about 1,500 cubic centimètres. In an another case of slight fatty heart, where, before the use of erythrophlœin, the number of the pulsations was from 68 to 60 a minute, and the quantity of urine reached 700 cubic centimètres, the latter increased to 2,150 cubic centimètres, while the pulse remained unchanged. The disturbances of respiration had also diminished. Erythrophlœin had also a marked effect on the pupil. In a patient with incompetence of the mitral valve, persistent dilatation of the right pupil ensued on the sixth day after administration. In another case with insufficiency of the aortic valves, distinct dilatation of both pupils came on on the fifth day; this disappeared some days later when the administration of the drug was discontinued. Kaposi had also observed dilatation of both pupils in a case of poisoning from the subcutaneous injection of two centigrams of erythrophlœin (*Journal*, March 24th, 1888). For the sake of comparison, experiments were made with strophanthus. In cases in which erythrophlœin exerted no particular influence on the frequency of the pulsations, the arythmia, and the congestive symptoms, from 60 to 70 drops of the tincture of strophanthus with equal parts of laurel water were administered in the day. The difference was very striking, and the slight effect of the erythrophlœin could not be compared with that of strophanthus. In one case, for instance, the frequency of the pulsations after the use of strophanthus soon fell from 112 to 72 a minute, and remained nearly at this rate. The arythmia had almost entirely disappeared, and the excretion of urine was augmented to a much higher degree than after the use of erythrophlœin. Symptoms of poisoning with erythrophlœin were observed on only two occasions. The result of the experiments with erythrophlœin may be summarized as follows: The drug had a marked retarding influence on the pulse, but the effect was not lasting. This was also true of its diuretic influence. The drug was well borne, and might be tried in cases in which digitalis, strophanthus, and similar medicaments were either not well tolerated or were contraindicated. Erythrophlœin did not appear to have any cumulative effect.—*British Medical Journal*, Sept. 1, 1888.

TREATMENT OF TYPHOID FEVER IN CHILDHOOD.—DR. A. JACOBI says: Can typhoid fever be *aborted?* or in other words, can incubation be interrupted? An affirmative answer to this question has often been given, but it is difficult to prove the correctness of the diagnosis in an

alleged case of typhoid fever lasting a few days only. Still, there can be no objection to believiug that the proliferation of the poison floating in the blood may be interrupted by antifermentative treatment, and it is certainly either justifiable or advisable to try the effect of otherwise not injurious antifermentatives, such, perhaps, as creolin or bichloride of mercury. As regards the early administration of a large dose of calomel, its effect is notoriously good, no matter whether it acts as a disinfectant directly on the poison, or whether it simply relieves the intestinal tract of the poison introduced, and in progress of proliferation. A child of 3 years may take a dose of 3 or 4 grains; a child of 8 years one of 7 or 8 grains. While the purgative effect of the calomel can be obtained by simply introducing the powder into the mouth, there to be absorbed, it is better in this case to let it be swallowed. It can be safely given during all of the first week of the disease. When, as frequently, there is constipation during the course of the disease, calomel is no less beneficial, but then it must be given in smaller doses, which may be repeated. Small doses of a quarter of a grain to a half grain repeated several times a day, will even have a good effect after diarrhœa has been present and been relieved.

With regard to the *general treatment* of the typhoid fever of children, we are equally liable to injure either by overactivity or by neglect. The so-called *expectant* treatment has its great dangers in the hands of those who make it their invariable rule; it is safe in the hands of those only who have learned to treat the sick rather than the sickness. The air in the sick-room must be cool, the windows open. Drafts, it is true, must be avoided, but screens around the bed will permit the opening of both windows and doors. The bed-sheets must be smooth; four or eight safety-pins will fasten them to the corners and sides of the mattress. At an early period the whole surface ought to be washed with either water alone or with alcohol and water. The hair, when long, ought to be cut. The children must be allowed plenty of water. Those who are liable to have dry lips and tongue must be made to drink a small quantity of either water or dilute muriatic acid in water, ten minims to the tumblerful, in small quantities or ever ten or twenty minutes. Fissures around the lips or in the tongue ought to be washed with a saturated solution of boracic acid, or when bleeding, should be painted once a day with a mild solution of nitrate of silver (not more than 1 per cent.) and afterwards painted with an ointment consisting of boracic acid and lanolin.—*Archives of Pediatrics*, December, 1888.

CREOLIN AS AN ANTISEPTIC.—EISENBERG has found that a 2 per 1,000 mixture of creolin killed the cholera bacillus and the streptococcus of pus and of erysipelas within two minutes; the bacillus of anthrax was killed in five minutes, while the typhoid bacillus and the staphylococcus of pus were still alive after one hour. This last organism, as well as tetragenes, was killed in ten to fifteen minutes by a 2 per cent. mixture. Compared with carbolic acid, it was found that a 3 per cent. mixture of creolin killed the spores of the anthrax bacillus in two days, a 6 per cent. mixture within twenty-four hours, while a carbolic acid mixture up to 8 per cent. had no effect on the spores within seven days. A similar comparative result was obtained with the hay bacillus, and the superiority of creolin over carbolic acid was further shown by its greater power in preventing the growth of organism in cultures. Creolin is not poisonous, as it may be given in large doses to dogs without deleterious effect. Eisenberg recommends its use in surgery in place of corrosive sublimate, carbolic acid, and iodoform.—*British Medical Journal*, Nov. 10, 1888.

CONSTIPATION IN INFANCY.—In cases that do not recover under proper dietary management, DR. EUSTACE SMITH recommends:

℞ Tinct. nucis vom. . . . . ♏ss.
Tinct. belladonnæ . . . . . ♏x.
Infusi sennæ . . . . . ♏xx.
Infusi calumbæ . . . . . ad ℥j.

This may be given thrice a day at first. After a time, two doses will be enough; and before long, one dose at bedtime. An equally good or better prescription is:

℞ Tinct. nucis vom. . . . . ♏ss.
Ext. cascaræ sagradæ liq. . . . . ♏xx.
Tinct. belladonnæ. . . . . ♏x.
Inf. calumbæ. . . . . ad ℥j.

The keynote is the combination of nux vomica with belladonna and some gentle laxative. Dr. Smith also recommends, where the motions are very dry, a saline aperient:

℞ Quiniæ sulph. . . . . gr. ¼.
Acid. sulph. aromat. . . . . ♏j.
Tinct. nucis vom. . . . . ss.
Aquæ . . . . . ad ℥j.

For a child of 6 months.—*Medical Record*, November 24, 1888.

INFLUENCE OF ANTIPYRETICS, PARTICULARLY OF ANTIPYRIN, ON THE AMOUNT OF GLYCOGEN IN THE LIVER.—MM. LÉPINE AND PORTERET have found that the administration of antipyretics (and they used antipyrin principally) decidedly increases the amount of the hepatic glycogen and diminishes that of the hepatic sugar. The antipyretics are obstacles to the transformation of glycogen into sugar, and the fact seems to be in perfect harmony with the recent work of Chauveau on the consumption of glycogen and the production of heat.

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SATURDAY, DECEMBER 29, 1888.

IMPORTANT NOTICE.

Hereinafter all letters, papers, notices and exchanges, designed for THE JOURNAL, should be addressed to "THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 68 Wabash Avenue, Chicago, Illinois." And persons having inquiries to make, or business to transact, will receive prompt attention at the same place until further notice.

CLOSE OF VOLUME XI.

The present number closes the eleventh volume of this journal, and completes the first five and a half years of its publication. As its readers already know, it also terminates the editorial services and management of the present editor.

Though already advanced in life and overburdened with professional work, he accepted the additional heavy responsibility, in 1883, of attempting to establish THE JOURNAL of the Association on a permanent financial basis, and at the same time make it a potent influence for counteracting the disintegrating tendencies of an excessive specialism and an open opposition to the National Code of Medical Ethics; and thereby preserve intact and further develop the grand National organization of the profession of this country that had been so well founded by the National Convention of 1846–7. Only two brief years had passed when the persistent and unnecessary controversy concerning the organization of the Ninth International Medical Congress was developed, and forced upon him an additional amount of labor difficult to bear. But the remarkable epidemic of professional controversies that has characterized the last decade has subsided, and should be left for the future historian.

In the meantime, THE JOURNAL, that had been commenced in July, 1883, when there were only about 1,000 members who had paid their dues annually, as shown by the Treasurer's report at the meeting in Cleveland that year, has been issued every week from that time to the present, when about 4,000 members are paying dues annually, to which may be added a considerable list of paying subscribers who are not members of the Association. The income, that was $5,008, as shown by the Treasurer's report in 1883, has increased, as shown by the same officer's report in 1888, to $25,649, and the Association has become owner of its own printing-office and materials, valued at $2,373.90, without one dollar of indebtedness in any quarter. The pages of reading-matter in THE JOURNAL have been increased until they number eight more than those of any other weekly medical journal in this country; and in quality of paper, type and illustrations they are excelled by those of no other. Equally gratifying is the fact that the Association has not only quadrupled its paying membership during the last half decade, but it has extended the scope and increased the efficiency of its working machinery as represented by its Sections, and its general meetings have been characterized by greater harmony and a more active spirit of scientific investigation; while the several State and local medical societies, upon which the whole fabric of permanent National organization rests, have been correspondingly increasing in their efficiency and influence for good.

Having thus more than realized all the ardent hopes of success that inspired him in commencing his editorial task in 1883, it is with the greatest pleasure that he now surrenders the honorable and responsible position to him who has been selected by the Board of Trustees to fill the same. DR. JOHN B. HAMILTON, for ten years the efficient Supervising Surgeon-General of the U. S. Marine Hospital Service, and late Secretary-General of the Ninth International Medical Congress, needs no introduction to the readers of THE JOURNAL and no eulogy by me. In the prime and vigor of

his manhood, with high literary and professional attainments, and well trained executive ability, I welcome him to a field of labor that will afford full scope for every noble attribute of which he is possessed. May he live to honor the position many years, and may THE JOURNAL, the American Medical Association, and all the State and Municipal Medical Societies in affiliation with it, continue to hold the whole medical profession of these United States in one grand harmonious organization, ever increasing in numbers, in scientific attainments, in skill for the relief of human suffering, and in reverence for that beneficent Deity who holds the destiny of individuals and nations alike in his own hands, and yet does not allow the poorest of his creatures to suffer without his notice. Finally, the retiring editor cordially wishes that all the readers of THE JOURNAL and its incoming editor may enjoy a truly *Happy New Year* for 1889, and repeat the same with each annual return for all the years to come.

PROFESSIONAL ABORTIONISTS.

The preface to the first edition of Sydenham's "Method of Curing Fevers," which appeared in 1666, opened as follows: "Whoever takes up medicine should seriously consider the following points: firstly, that he must one day render to the Supreme Judge an account of the lives of those sick men who have been intrusted to his care. Secondly, that such skill and science as, by the blessing of God, he has attained, are to be specially directed towards the honor of his Maker and the welfare of his fellow-creatures, since it is a base thing for the great gifts of heaven to become the servants of avarice or ambition. Thirdly, he must remember it is no mean ignoble animal that he deals with."

Within the past two weeks the public and the medical profession of Chicago have learned, through exposures in the Chicago *Times*, that there are numbers of professional midwives and licensed physicians in this city, who declare that for a money consideration they will commit the loathsome crime of abortion, or, if some will not, they can recommend others that will. The *Times* has printed the names of midwives and physicians who declare they are ready to do murder, and most foul murder, for money, or else recommend some one that will commit a violation most wicked of the laws of God, Nature, and man. As between the assassin, or the thief, and the man that recommends the assassin or thief there is but little difference. Between the licensed midwife-abortionist and the licensed physician-abortionist, what is the difference? It is one of degree, and the deeper degree of infamy attaches to the latter. He is supposed to be more intelligent, to be actuated by higher and more noble principles, and to have for the chief end and aim of his life-work the preservation of human life.

Nothing we can say in this age can paint the crime of abortion in all its loathesomeness, nor its perpetrators, and the inciters to or abetters of its perpetration in all their moral blackness and professional degredation. "The licensed Herods" that have been exposed, that are willing to commit murder, that have blackened the good name of our noble profession, and given themselves over to the eternal infamy and abhorrence of all mankind, have but themselves and their sordid motives to thank for the present exposure, and its possible consequences.

In expressing themselves as willing to commit this crime, or to recommend others that will, men show themselves possessed of consciences too near in kind to those of brutes and beasts to be reached by moral agencies. What remorse may come to them will be born of the fact of exposure —the sorrow of the thief that he is caught.

It is not our purpose, nor is it proper for us to be judge and jury in regard to these cases. The State of Illinois has laws, and instruments for their execution; it has a State Board of Health; and there is a large medical society in this city, to which some of the offenders belong. Men that will commit abortion are unfit for citizenship in any civilized state, are too far lost to moral responsibility for the profession of medicine, and too degraded to be the associates of honest men. Then let the police, the courts, the State Board of Health, and the medical societies take the record furnished by the *Times* and deliberately proceed with the execution of the laws of the State and the ethics of the profession with strict impartiality and unswerving justice. To leave the matter where it is, a simple newspaper exposure, will result in its horrors being forgotten in six months, while the black list will remain as a convenient directory for those who may be in want of abortionists in the future.

Will honest men endure the fellowship of lawless, abhorrent and infamous men that traffic for personal gain in the weakness and shame of poor erring humanity?

Criminal abortion, the National disgrace, has culminated in the exposure in Chicago. It is to be regretted that the matter was not worked up at the same time in other cities, so as to clear the country of the harpies that foul the medical profession.

After all, we may trace the origin of this matter, in a great measure, to our system of medical education, and to the attitude of the public and the newspapers in regard to higher medical education and State regulation of medical education and practice. We do not claim that all highly educated men are moral, nor that badly educated men are always immoral. But if the public and the newspapers will cease their interference with plans and projects for higher medical education, and for more stringent regulation of the practice of medicine, the medical profession will be improved, both for its own good and for that of the public.

EDITORIAL NOTES.

FOOD ADULTERATION IN MINNESOTA.—The report of Dr. Drew, of Minneapolis, Chemist to the State Dairy Commission, just made public, shows that the adulteration of food in Minnesota has assummed alarming proportions. In his report Dr. Drew says that no evidence of adulteration was discovered in the samples of flour and bread examined. In baker's chemicals nearly all were adulterated. Of 29 samples of cream of tartar examined 17 were adulterated, and bicarbonate of soda was only half pure. In the baking powders commonly used, ingredients were found which were likely to lead to the impairment of health. The alum powders are declared to be cheaply made and contain large proportions of flour or starch. Twenty samples of teas were examined and three found to be adulterated. Only 3 out of 7 samples of ground coffee were found pure. Of 81 samples of spices 64 were adulterated and 17 were pure. Out of 34 samples of "pure cider vinegar" 9 were found pure and 2 adulterated with water. Twenty-three vinegars, not cider, were found to be adulterated with water. Of 10 samples of cider all proved to be apple cider adulterated with glucose sirup, citric or tartaric acid, or of a wholly fictitious character. All but one contained acids prejudicial to health. Adulterations were found in sugars, confectionery sirups, lard, honey, and in almost every article examined.

EXECUTION BY ELECTRICITY.—A committee of the New York Medico-Legal Society has made a report on the best method to be followed under the law for execution by electricity, which goes into effect in that State on January 1. It will be remembered that some unfavorable criticism was given upon the proposed method by a number of physicians in New York. The reasons given against execution by electricity were two, viz.: that it was not certain enough; and that if successful it was too humane, as it defeated the ends of justice by robbing the criminal's demise of all its terrors. No answer is needed to the latter reason, and the above-mentioned committee's report embodies directions which, if followed out, will make death as certain as it is swift. A stout table, covered with rubber cloth, is provided, upon which the prisoner is firmly bound. One electrode is inserted in the table in such a manner that it will impinge upon the spinal column between the shoulders; the other electrode is pressed to the back of the prisoner's head, the hair being cut close and moistened with warm water. A dynamo generating an electro-motive force of at least 3,000 volts is recommended, the current to pass alternately for thirty seconds. It is anticipated that these specifications will meet the approval of the State authorities.

POISONING FROM FALSE-TEETH PLATES.—A case of supposed poisoning from denture plates is reported from New Haven. The sufferer recently bought a set of false teeth with a rubber plate. He had worn them but a short time when his tongue began to swell. This continued until it was much beyond the natural size. His eyelids also swelled up so that he was blind for a time, and other parts of the body have been similarly affected.

DEATH AFTER A LONG FAST.—A man in Kansas City died on Dec. 16, after a fast that began on Nov. 1, in which he took only a little water occasionally. He was a sufferer from renal disease, and after Nov. 1, could not be induced to take food

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Sinclair, A. G., Iritis; Electro-Magnetism in Ophthalmic Surgery.

Stebbings, H. F., Hydrophobia.

Steele, D. A. K., Report of the Committee on Surgery. Illinois State Med. Soc., 1887; The Microbic Revolution in Surgery.

Stenzel, K. G., Rhizodendron Oppoliense Göpp.

Sternberg, G. M., Disinfection and Individual Prophylaxis against Disease (Lomb Prize Essay).

Storer, H. R., The Medals, Jetons and Tokens illustrative of Obstetrics and Gynæcology.

Stowell, C. H., The Student's Manual of Histology.

Stuckey, J. A., Report on Rhinology.

Sullivan, T. J., Administration of Chloroform.

Theobald, S., Case of Convergent Squint.

Thompson, Sir H., On Tumors of the Bladder; Important Points Connected with the Surgery of the Urinary Organs.

Thorner, M., Removal of Foreign Bodies from the Larynx.

Tipton, F., The Negro Problem from a Medical Standpoint.

Tyler, Lachlan, Diphtheria and Tracheotomy.

Tyson, Jas., Does the Present State of Knowledge Justify a Clinical and Pathological Correlation of Rheumatism, Gout, Diabetes, and Chronic Bright's Disease?

VanBuren, W. H., Lectures on the Principles of Surgery.

Vaughan, V., Healthy Homes and Foods for the Working Classes (Lomb Prize Essay).

Walker, J., Health Lessons.

Watson, B. A., Rational Medicine *vs.* Empiricism.

Waxham, F. E., Intubation of the Larynx.

Webber, S. G., Treatise on Nervous Diseases.

Wells, F., Draper, F. W., *et. al.*, Six Lectures upon School Hygiene.

Whitehead, W. R., Report on Orthopædic Surgery.

Whittington, C. F., The Relation of Hospital to Medical Education.

Whitwell, W. S., Transfusion in Typhoid Fever.

Wile, W. C., Surgical Notes.

Wilson, J., Drainage for Health.

Wood, E. A., Heredity and Education.

Woods, J. T., Finger Injuries.

Wooton, E. Tuberculosis and Scrofula.

Wright, T. L., Inebriism.

Wyman, H. C., Constitutional Treatment of Caries and Necrosis.

Zaaijer, T. DeToestand der Lijken na Arsenicum-Vergiftiging.

The usual exchanges, including foreign and Domestic Transactions, Hospital Reports and College Announcements have been received, but are omitted for want of space.

SOCIETY PROCEEDINGS.

Philadelphia County Medical Society.

Stated Meeting, November 28, 1888.

THE PRESIDENT, J. SOLIS-COHEN, M.D., IN THE CHAIR.

(*Concluded from page 893.*)

DR. WILLIAM HUNT read a paper on

DIABETIC GANGRENE.

DR. THOMAS G. MORTON, in opening the discussion, said: Thirteen cases of diabetic gangrene have come under my observation, generally in consultation. In all instances the disease involved some part of the lower extremity, generally originating in one or more of the toes, or about the dorsum of the foot. Many years ago I witnessed a needle operation for cataract in a young girl who was known to be markedly diabetic; sloughing and gangrene of the orbital contents resulted, and death by coma occurred on the third day. With some few exceptions, the patients I have seen with gangrene in the course of diabetes, have been in good circumstances. I refer to this because it has been suggested that this disease more frequently occurs among those who are surrounded by the comforts and luxuries of life, and not among the poor. An inquiry recently made of the superintendents of our State hospitals for the insane shows that although more than twenty thousand patients belonging to the indigent class have been under the care of the present medical officers of these hospitals, there has not, it seems, been a single case of diabetic gangrene in the institutions at Harrisburg, Dixmont, Danville, Norristown, or Warren. Gangrene in diabetes, in the cases I have seen, has generally started in a local inflammation, resulting from some very trivial cause; on several occasions I have known it to follow the operation of cutting a corn. The occurrence of gangrene in diabetes seems to be a certain indication of great nervous exhaustion, and of a general condition most critical. Although I have observed gangrene as a result of diabetic condition in parts of the body other than the extremities, notably diabetic carbuncular disease, yet gangrene appears more often in the toes and feet, where there is but a moderate amount of cellular tissue, and where the circulation in such cases is apt to be feeble.

The surgical treatment of this form of gangrene can generally be but palliative, most of the cases I have seen have been promptly fatal. The ordinary principles of surgical treatment should be observed; all tension of parts ought to be relieved by deep, free incisions, which, by relaxing and draining the tissues, permit a better circulation; indeed, I have often arrested the rapid march of gangrene by such treatment. When a line of demarcation forms, which may occasionally happen, the question of amputation may arise. Occasionally the gangrene of diabetes is associated with most excruciating pain, not only in the affected limb, but apparently in the gangrenous parts. I have had two such cases, both females, and in each I performed nerve section, with partial relief in one, and with complete success in the other. In the first, I sectioned the posterior tibial, in the other the sciatic. The latter case I saw in consultation with the late Dr. L. M. Service, of Belmont, near the Falls of Schuylkill; the patient was 70 years of age, a large portion of the foot was already gangrenous, the pain in the foot and leg as far as the knee was excessive. I sectioned the sciatic in the middle of the thigh; the gangrene, which was not apparently hastened or influenced by the operation, very slowly extended for some weeks, until a point about four inches above the ankle was reached, where a line of demarcation formed. Subsequently, Dr. Service, Jr., removed all the gangrenous parts without encroaching upon the living tissues. The patient improved, was able to move about her room with comfort, and with entire freedom from pain; eight months afterward she died from an attack of acute dysentery.

DR. JOHN ASHURST, JR.: Of course, we have been familiar for years with the tendency of diabetics to suffer from gangrenous affections, such as carbuncle and, though not so characteristic, furuncle; and we have also known that intracranial injuries may give rise to diabetes, or rather to glycosuria. Verneuil considers the question of sugar in the urine from irritation of the floor of the fourth ventricle, and shows that it may be a temporary condition, the sugar disappearing as recovery from the injury takes place, and without leaving permanent results.

In many cases of diabetic gangrene, as Dr. Hunt points out, the quantity of sugar in the urine at different periods varies; it may, in fact, be absent at times, and thus even careful examination of the urine during such intervals may fail to reveal the condition. I have but one recorded instance of diabetic gangrene in my personal experience. The patient was a man of middle age, sent to the hospital with strangulated hernia of some four or five days' duration. The attending physician informed us that the man had long been a diabetic. Operation was deemed imperative, and was undertaken. There was but a small patch of gangrene in the bowel, which was left in the wound after relieving the constric-

tion, so as to allow the formation of an artificial anus. Next day not only the bowel but the edges of the wound and the surrounding tissues were gangrenous, and death rapidly ensued. It was a case, then, of rapid moist gangrene, following a comparatively small incision. I have seen other cases, which I believe were instances of diabetic gangrene, though this was not demonstrated by an examination of the urine, that bear out Dr. Morton's statement of the liability for this condition to be precipitated by slight injuries, such as the rubbing of a boot or cutting a corn. The gangrene is moist rather than dry, which may be a valuable factor in diagnosis. Whenever we see spontaneous gangrene of the moist variety, it should at least excite the suspicion of diabetes.

There are, however, other influences which predispose to spontaneous gangrene, the most common, perhaps, being alcoholism. Verneuil refers to this fact, and says that in what he calls "alcohol-diabetes" gangrene is particularly apt to occur, as there are then two predisposing causes acting at the same time. Another cause of gangrene after amputations and other severe operation, as surgeons are aware, is the presence of certain forms of Bright's disease, the granular kidney especially. In these cases diabetes may sometimes co-exist, and the presence of sugar fail to be recognized, simply because it is not looked for.

As to the treatment of diabetic gangrene, locally, the less done, as a rule, the better. I would go further than Dr. Morton, and would wait not merely for the line of demarcation but for that of separation, which may appear some days, or even weeks, later than the former, before proceeding to amputate. In the majority of cases of spontaneous gangrene, diabetic or not, it is the better practice to trim away dead parts with forceps and scissors, rather than to attempt a radical operation. I have seen, after amputation, rapid return of the gangrene, spreading extensively and causing death. Constitutionally, it is a guggestive fact that the one remedy of greatest value in spontaneous gangrene of any kind is a remedy which has obtained a deserved reputation in the management of diabetes, *i.e.*, opium. Opium in doses of 1 grain, or 1½ grains, night and morning, or larger doses if needed, will often show its good effect in tending to arrest the gangrene in a short time. In many cases of spreading ulceration opium is also of value. For the treatment of diabetic gangrene then, opium internally and the less heroic treatment of the affected part seem to me to offer the best prospect.

DR. JAMES TYSON: Notwithstanding the exhibit made in the exhaustive paper of Dr. Hunt, I cannot but think that diabetic gangrene is a rare disease. Taking my own experience, referred to by Dr. Hunt, of fifty-five recorded cases in private practice since 1884, and probably at least twenty-five more prior to that date not so accurately recorded, and realizing, as I always have, its possible occurrence, the fact that not a single case has occurred under my observation is a significant one. It is to be remembered, of course, that many of these cases passed from my notice before they terminated. Dr. Hunt has asked for a parallel to his case of paralysis, etc. I cannot give an exact parallel, but one sufficiently so to justify an allusion in the same connection. A gentleman of multiplied business and financial interests came under my care for diabetes when he was 52 years old. Three years later there occurred a sudden hemiplegia. Within a few days after the paralysis occurred, the glycosuria disappeared and has not returned, though nearly two years have since elapsed. The percentage of sugar had been at one time as much as 7 per cent., and was constantly 2 or 3 per cent. In regard to the infrequency of diabetes among the poor no better proof could be given than the fact that in the Philadelphia Hospital, where more than a thousand patients are present at one time, it will often be impossible for weeks to get a case for lecture.

Dr. Morton has alluded to the extreme pain in diabetic gangrene. I have observed the same thing in gangrene associated with granular kidney. I scarcely think it should be regarded as peculiar to the gangrene of diabetes.

DR. JAMES DARRACH: I have seen but one case of gangrene associated with diabetes, the one noted by Dr. Hunt in his admirable and exhaustive paper delivered to the Society this evening. Two others of the legs and two of internal gangrene have also come under my notice in my practice. Those of the legs were in women over 70 years of age, and while I cannot recollect about the condition of the urine in these cases, from my custom of examining the urine in old people for sugar, it having been stated that it was not an unusual thing to find it in the urine of the aged, I doubt the probability of sugar escaping my notice. Dr. Hunt has mentioned that diabetes is a disease of the well-to-do, and referred to the rarity of the disease in hospital patients and among the poor. This would appear to be corroborated by the statement of Dr. Jordas, who writes that in an aggregate of 22,735 admissions into, I think, four hospitals in Lisbon, there was not one case of diabetes, and of 5,700 deaths, in 1862, four only were from this cause. Perhaps climate may, in a measure, account for this small proportion of diabetes, the inhabitants of southern countries being considered by some writers not so liable to this disease; and I might add that, as some malcondition of the nervous system holds a prominent position in the etiology of diabetes, we might find an explanation in the fact that the inhabitants of

the sunny South are not exposed to the strain upon that part of their organization, as are those who live in countries where the brain is taxed to the utmost.

Dr. Hunt has spoken of the more palpable and well-recognized forms of gangrene. Dr. Wm. H. Dickinson has reported that in the autopsies of five cases of diabetes he has found peculiar morbid changes in the cerebro-spinal system, consisting in dilatation of the arteries and a degeneration of the nervous matter at certain points external to them, occasioning destruction and excavation of the tissue around the vessel. Kaposi describes a peculiar form of inflammatory gangrene of the skin, which I suggest might be owing—as has been described as the pathological condition in shingles—to necrosis of the terminal nerve filaments. I mention these as a probable addition to gangrenous affections in diabetes, which I believe Dr. Hunt does not refer to in his paper, and would suggest that the nervous system should be examined more than has been done in autopsies of this disease. I would inquire of Dr. Cohen whether he included in his statement cases with small amounts of sugar, and whether the sugar was established by the cupric oxide test alone. I feel interested, as from my own examinations I have been led to doubt the existence of this element in normal urine. The existence of sugar has been supposed from the reduction of the oxide of copper. This reaction is accounted for by the uric acid and kreatinin. I would like to ask Dr. Tyson how far his examinations sustain this view.

Dr. W. Osler: I think that Dr. Hunt has underrated the proportion of cases of diabetes that die with pulmonary complications. In my own experience of six autopsies there were three—two of consumption and one of gangrene. Frerichs, in his important monograph, which contains a study of 400 cases, states that nearly one-half of all diabetics die of lung disease. There are three forms: The most common is a rapidly fatal lobar pneumonia, very liable to terminate in gangrene. Second is a broncho-pneumonia, which is still more liable to be complicated with gangrene. Thirdly, and most commonly, there is a genuine consumption, which is tuberculous, as demonstrated by the presence of the bacillus.

Dr. Nancrede: I would like to add another case to the list, which I had supposed was one of those referred to by Dr. Neilson, but it appears not; it was one of moist gangrene with large amounts of sugar in the urine, where the disease started in the fourth toe. In the other case, which Dr. Neilson mentioned to Dr. Hunt, I amputated the thigh high up for moist gangrene *not* due to diabetes. It illustrates the futility of amputating anywhere near the site of disease, for the artery was thrombosed to the groin. Unless the operation be done above the knee for gangrene of the foot, we are almost certain to have recurrence in the wound with rapid spread of the disease and death. The practical outcome of this discussion should be to lay down a rule not to undertake any serious operation unless the urine has been tested for sugar, as well as for albumin. Since I assisted at an amputation of the breast in the practice of a friend, in which the urine had been found free from albumin prior to operation, but after the amputation the urine was found to be loaded with sugar, I have pursued this rule. Perhaps if the urinary examination included testing for sugar, as well as albumin, there would be fewer unexpectedly fatal terminations to operations and more cases of diabetes recognized.

Dr. J. William White: If Dr. Hunt had been able to elicit from his correspondents the facts as to the coexistence or absence of certain other conditions likely to give rise to gangrene, we could better estimate the relative etiological importance of diabetes in these cases. Thus, in one of Dr. Agnew's cases which I had the opportunity of seeing, and upon whom I performed a knee-joint amputation, the subject was a man of 52 years, with chronic alcoholism and with marked atheromatous changes in the vessels. In this case we had, therefore, two conditions, either of which was competent to produce gangrene without the concurrent diabetes. Dr. Hunt's admirable and otherwise exhaustive paper would, perhaps, have been more conclusive had it been possible to include these points.

Dr. S. Solis-Cohen: Dr. Nancrede's remarks suggest an explanation of the comparative meagreness of hospital records of diabetes, and of its supposed rarity among the poorer classes. Urinary analysis is not as general or as thorough as it ought to be. In the medical clinic of Jefferson Medical College Hospital, where it is the invariable rule to examine the urine of every patient, no matter how trifling the complaint, not a year passes that one or more cases of unsuspected diabetes, or at least glycosuria, are not discovered. Further, I would suggest that out-patient clinics or dispensaries, and not hospital wards, are the places to search for public records of diabetics of the poorer class. The Jefferson clinic has, I suppose, from five to ten or more cases of diabetes annually, in a service of about 4,000 new cases. At the Philadelphia Polyclinic, during nine months of this year, between 300 and 400 patients have been treated in the medical department, of whom three have been cases of diabetes. This large proportion is to be accounted for by the greater number of special clinics in the same building, reducing the attendance at the general clinic. Taking the entire non-surgical service of the institution, the proportion of diabetics would be reduced somewhat below that of the Jefferson clinic. Of course, in institutions like these, consultation cases increase the average of rare diseases of all kinds

above that of ordinary dispensaries. Still, considering the aggregate number of diabetics at these two clinics, of which I have personal knowledge, and remembering that urinary examinations are not as thorough as they should be in private practice among the poor, and that diabetics, as a rule, are walking cases until near the last; and, therefore, not to be looked for in hospital wards, I must doubt the force of Dr. Hunt's social distinction.

Dr. Cohen replied to Dr. Darrach that dependence was never placed upon a single test, and there was little probability that uric acid and kreatinine had been mistaken for sugar. One disadvantage of dispensary practice in these chronic cases was the inability to keep patients under observation for more than a short time. They wandered elsewhere, and might possibly be doubly or trebly reported.

DR. THOMAS S. K. MORTON: I should like to make more special point of what the practice of antisepsis enables the surgeon to accomplish in dealing not only with diabetes, but with all sorts and conditions of depraved system when upon them have been engrafted complications which, with modern methods of wound treatment, are at least entitled to have some attempt made for their relief. Under this heading would be included diabetes, Bright's disease, the graver infectious and contagious diseases, ataxia, and all other serious nutritional alterations dependent upon nerve or other change. Now the dangers principally to be dreaded in undertaking operations in persons subject to such diseases are those of *infection*. Little need be feared until this dire calamity has occurred. The most innocent forms of senile or other gangrene may at any time become so infected and change their nature to one of greatest malignancy. On the other hand, even large areas of necrotic tissue will not putrefy nor infect the system until bacterial decomposition takes place in them. I am convinced that infected gangrene existing without skin lesion usually has derived that complication from noxious bacteria lying deep in the various appendages of the skin. Hence the evident advisability of protecting a part about to become sphacelated by antiseptic covering; preferably by a carbolic or combined carbolic and sublimate dressing, for in such cases carbolic acid is a necessary constituent of the dressing that the fat and other skin glands may be deeply penetrated and disinfected by its influence—a property not possessed by sublimate and other disinfectants.

When infection takes place in a case of one of the above-mentioned diseases, the already depraved tissues are powerless to resist the onslaughts of bacteria, and frightful pillage and destruction are the result. Especially is the system unable to cope with the attacks of bacteria when diabetes is present, for then is provided in addition to the other favorite pabula of bacteria, glucose, which, in tissue solution, affords a most capital medium for the culture and dissemination of poisonous and tissue-destroying microörganisms.

We must then have ever in mind, that in dealing with surgical complications of any of the diseases which have been quoted, but more especially in the case of diabetes, that our object should be: 1. To prevent infection of a part about to become gangrenous, by instituting disinfection and subsequent protection; and, above and beyond all, never to apply a poultice. 2. Only to interfere surgically when absolutely necessary. 3. To operate only with thorough and powerful antisepsis —asepsis will never answer in these cases. 4. To relieve tension absolutely, and to eradicate as much of the diseased tissue as possible, and to disinfect thoroughly and render sterile all that cannot be so treated; for unless this be accomplished, a favorable result, or arrest of the destructive process, cannot be expected. 5. In suturing or dressing, to make no great traction upon any portion of the wound or its surroundings, and to provide most liberally for drainage. 6. To dress the wound in such a way as to prohibit subsequent infection, and to redress it upon the slightest indication. 7. To remember that non-union and non-healing will probably result, but that we may be bold in doing what seems indicated, for local harm cannot come save by infection.

DR. DE FOREST WILLARD: I cannot agree with the suggestion to make incisions to relieve the tension, I consider any interference injudicious in slow gangrene. The only safe plan is, to wait for the line of demarcation. Some months since, a man almost moribund came to the hospital with gangrene of the leg, and with crepitation extending as high as the hip-joint. Under excessive stimulation, twenty-four ounces of whisky daily, he rallied, and I cut away the parts with scissors, through the knee-joint. A quick operation, or one near the part, would have caused death. Recovery has taken place, though a spot is now making its appearance on the toe of the remaining leg.

DR. TYSON: I am very glad to hear Dr. Darrach's remarks. I do not believe that sugar is ever present in normal urine. The copper-reducing substance in such supposed cases is most frequently uric acid.

DR. ASHHURST: The pain of diabetic gangrene so frequently alluded to this evening is, I think, rather a feature of the local process than of constitutional cause. Slow gangrene, especially if being superficial, it involves a greater extent of nerve distribution, is more painful than rapid or deep-seated gangrene, where the nerves escape to a great extent, or are quickly destroyed. The recommendation to amputate at a very high point in cases of spontaneous gangrene, is by no means

new, having been strongly urged many years ago by James, of Exeter; it has been recently revived by Mr. Holmes and other surgeons, but the general consensus of surgical opinion is against it. In traumatic gangrene, of course, the case is different. There the proper course is, I think, to amputate as soon as possible, at a point well above the limit of the gangrenous portion.

MISCELLANEOUS.

GLANDERS AS AN INFECTIOUS DISEASE.—The following letter, upon the subject of glanders as an infectious disease, and the propriety of killing animals suffering from said disease or farcy, as soon as recognized, is published for the information and guidance of the Army:

BALTIMORE, JULY 24, 1888.

To the Quartermaster-General U. S. Army, Washington, D. C.

General:—In reply to your communication of July 16, I have the honor to submit the following statements and opinions:

Glanders is an infectious disease in which the infectious agent has been demonstrated to be a living micro-organism—a bacillus.

The bacillus of glanders was discovered by the German bacteriologists Löffler and Shutz, in 1882, and the discovery has since been confirmed by several other competent bacteriologists. It is found in the nasal secretions and ulcers of the mucous membrane, in the "farcy-buds" pustules and enlarged lymphatic glands of infected animals, and it is probable that it is also sometimes present in the urine.

It is a slender rod, somewhat similar in appearance to the well-known tubercle bacillus, but more uniform in size and somewhat broader. In preparations stained with fuchsin or with Löffler's solution of methyline blue, clear spaces are often seen in the rods which have been thought by some authors to be spores, but this is doubtful, as Löffler has found that no development occurs after the bacilli have been exposed to a temperature of 55° C. (131° F.) for ten minutes.

Pure cultures of this bacillus have been shown to produce typical glanders in horses and asses, and it is recognized by bacteriologists as the cause of the disease. The disease may also be transmitted by inoculation to guinea-pigs and to field-mice, which animals (preferably guinea-pigs) may be used as a test of the infectious character of the nasal secretions of a suspected animal.

Exact experiments have shown that the bacillus of glanders is killed by exposure for five minutes to a 5 per cent. solution of carbolic acid, or by a 1 to 5,000 solution of corrosive sublimate.

In practice it will be best to rely upon boiling water for the disinfection of all articles which can be immersed in it without injury—rope halters, blankets, curry-combs, bits, etc. To keep on the safe side, half an hour may be fixed as the standard time during which articles to be disinfected shall be immersed in boiling water, or exposed to steam at a temperature of 212° F.

Articles of leather should be repeatedly washed with a 5 per cent. solution of carbolic acid or a 1 to 1,000 solution of corrosive sublimate; or immersed in such a solution for at least one hour. If the solution can be used hot, say 180° F., without injury to the material, this will be desirable.

QUANTITATIVE ESTIMATION OF ALBUMIN IN THE URINE.—The possibility of estimating the amount of albumen in fluid by the difference in specific gravity before and after the coagulation of the albumin has been experimentally investigated by Huppert and Zahor, and the last-named has attempted to apply the method to the urine. He recommends that the proportion of acetic acid required to coagulate the whole of the albumin be ascertained by a preliminary experiment. A specimen of the urine after filtration is then treated with the necessary amount of acetic acid and divided into two parts. One part is put into a bottle, which must be stoppered with an India-rubber cork, and kept in a water-bath at a temperature of 100° C. for ten minutes or a quarter of an hour. The urine is then cooled and filtered, care being taken to prevent loss by evaporation during this process. The filtrate and the portion of acidified urine originally reserved are then brought to the same temperature, in a water-bath, and the specific gravity of both very carefully taken. The difference between the two figures thus obtained, multiplied by 400, the average coefficient ascertained by experiment, gives the amount of albumin in grams, in 100 cubic centimetres. The average error is stated to be plus or minus 0.0175 gram, but may amount to 0.05.—*British Medical Journal.*

THE CASE OF DRS. MCCOY AND WILDMAN.—In the case of the revocation of the certificate of Dr. Henry G. Wildman, of Chicago, by the State Board of Health, and the action of the Governor in overruling the same, it is but just to say that in the McCoy case, upon which the decision of the Supreme Court was based,—holding that McCoy's certificate was not regularly revoked—McCoy virtually swore the Board out of court, swearing that he had not received notice to appear before the Board and had had no notice of the revocation of his certificate. At the time of the revocation of McCoy's certificate he was advertising himself to be at St. Louis, Belleville and Alton. The Board served notice upon a person who represented himself as McCoy, yet in court McCoy swore that he had never been in Alton. In a similar case against McCoy now pending in the Supreme Court the Board presented two witnesses, one from Belleville and one from Alton, who swore to having served notice upon McCoy to appear before the Board, also notice of revocation of his certificate. McCoy appeared in the first trial brought against him, but not in the second—he being rarely in Chicago. The action of the Governor is simply based on the decision of the Supreme Court in the first case against McCoy, and on technicalities. The Board will not let the matter rest where it is now.

GAME FOR INVALIDS.—After being properly prepared, boil a fine young bird until it is three parts cooked; then remove the skin, pick all the flesh from the bones, and pound it in a mortar, with a little of the liquid in which it was boiled, three tablespoonfuls of finely sifted bread crumbs, a teaspoonful of grated lemon rind, a sufficient seasoning of salt, and a grating of nutmeg. When pounded to a perfectly smooth paste, put the mixture into a saucepan with a little more of the liquid, and let it simmer gently for ten minutes. When finished, the panada should be slightly thicker than good cream. It will keep quite fresh and sweet for three or four days, and can be heated, a few spoonfuls at a time, and served poured over a slice of nice, crisp, hot toast, or in a very tiny dish with sippets of hot toast inserted round about. Nothing more quickly destroys the capricious appetite of an invalid than having a large dish of anything, no matter how dainty, set before them; they require to eat often, but only a very little at a time.—*St. James Gazette.*

HEALTH OF PITTSBURGH.—The report for November shows the number of deaths to have been 316, a rate of 16.5 per 1,000 inhabitants annually. Infectious diseases numbered 157, as follows: Forty-one cases and 21 deaths of diphtheria; scarlet fever, 57 cases and 5 deaths; typhoid fever, 59 cases and 19 deaths. In addition, consumption caused 25 deaths; diseases of the nervous system, 31; circulatory, 17; respiratory, 62; digestive, 13; violent causes, 33.

BROOKLYN MEDICAL AID SOCIETY.—James D. Conklin, manager of the Brooklyn Medical Aid Society has presented to the organization his first semi-annual report. The society was at first opposed by the Kings County Medical Society, but it afterward approved of its methods as a relief to people of the middle and poorer class, who, by this means, were enabled to secure medical attendance and prescriptions without the cost that usually attends such services. The society now has twenty physicians and sixty-six druggists who supply its subscribers free with attendance and medicine. The subscribers pay on the insurance plan: From 16 to 70 years at from 2 cents to 18 cents a week, rates being made for families. The report contains the following interesting facts in connection with this new society. The books of the Society were opened April 16, and 2,188 certificates of subscription have been granted since then, 619 being between 16 and 30 years, 125 between 30 and 60 years, 987 between 1 and 10 years, and 459 between 10 and 16 years. Certificate holders have made 867 calls on the society's physicians and the physicians have made over 900 calls on patients. There have been 978 prescriptions given to members and dispensed by the druggists, all of which service and medicine has been furnished to the certificate holders free of charge, in accordance with the rules of the society. Manager Conklin requests that the medical staff be increased to twenty-five and that the number of druggists be increased to 100, to meet the growing demands of the society. Out of the total number of certificate holders, only six have died since the formation of this society.

OPERATION FOR TORTICOLLIS.—Dr. Levrat has devised a new method of treating torticollis. Instead of operating subcutaneously, he cuts down upon the sternal tendon of the sterno-mastoid muscle, effected by a longitudinal incision 2 centimetres long. He clears the tendon with the forceps, passes a grooved director under it, and divides it. He then divides any tissue that may bind down the muscles at that spot, sutures the wound, and dresses it antiseptically with iodoform and gauze. Over the dressings he places the following: The head being enveloped in cotton wool, a silicated bandage is wound horizontally around it at the level of the forehead, and a similar bandage vertically over the crown and under the jaw. Where these bandages meet at the level of the mastoid process on the sound side, a small hook, with the concavity looking upwards, is inserted. Another silicated bandage is wound round the body below the axillæ, and through the thickness of the bandage a hook is inserted in the middle line in front, having its concavity looking downwards. When the bandages have dried, the two hooks are connected by a band of India-rubber, which assists the sterno-mastoid of the sound side to keep up a continuous traction and so correct the deformity. This apparatus and the dressings are left untouched for fifteen days, and the success of the operation is said to be assured.—*The Lancet.*

DANGER IN THE POSTAGE STAMP.—The *Sanitary News* calls attention to the fact that a postage stamp may in various ways convey contagion. One of the simplest and most plausible is that in which a postage stamp, partially attached to a letter to pay return postage, is sent by a person infected with some disease to another person. The disease is transferred in the first place to the adhesive stamp through the saliva, and in being attached to the letter by the receiver the poison may be transmitted to him in turn through the saliva. Another cause may be the infection of the stamp with disease germs. The stamp, having been exposed in a room where a diseased person lies, may become slightly moistened and thus retain the germ. That this is true can be proved very simply by a microscopical examination. We often see a person holding change for a moment in the mouth, probably not knowing that investigation has shown that disease germs can be carried by money. If one could see through what hands the money has passed they would hesitate before using such a third hand. Silver money is as bad as paper money, but while many would hesitate to hold a dirty bank note in their mouth, they think that a silver piece, because bright, is apparently clean.

HEALTH OF CHICAGO.—November's mortality reports show that 1,061 people died in Chicago during the month; of these 298 died of zymotic diseases. Diptheria caused 105 deaths during the month. Typhoid fever caused the death of 40 persons, and scarlet fever of 14. One hundred and seventy-nine persons died during November from constitutional diseases, 111 of these deaths being caused by consumption. From local diseases there were 445 deaths, 77 being from infantile convulsions. Diseases of development caused 65 deaths, and 73 were the result of violence, 18 being killed by trains.

THE RED CROSS SOCIETY OF FRANCE.—This Society, which rendered invaluable services during the Franco-German war, dispenses large sums every year for the relief of old and disabled soldiers and their widows and orphans. Last year it distributed to 1,760 soldiers who had been wounded in war, and 327 dependent relatives, a sum of 47,506 francs, as well as numerous artificial limbs and surgical appliances. The perfection of different types of ambulance wagons is a subject to which the Society is giving much attention.—*British Medical Journal.*

N. W. OHIO MEDICAL ASSOCIATION.—The thirty-second semi-annual meeting of the Northwestern Ohio Medical Association was held in Toledo on December 13, with a large representation from all over Northwestern Ohio. Dr. C. E. Beardsley, of Ottawa, was elected President for the ensuing year, Dr. F. W. Brayton, of Carey, first Vice-President, Dr. J. A. Duncan, of Toledo, second Vice-President, Dr. Durbin, of Woodville, Secretary, and Dr. Hathaway, of Toledo, Treasurer.

DISTILLERY FED CATTLE.—The health authorities have refused to allow the cattle ordered from the Chicago distilleries to be fed in Lake View.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department U. S. Army, from December 15, 1888, to December 21, 1888.

Lieut.-Col. Charles T. Alexander, Surgeon, and Capt. Henry S. Kilbourne, Asst. Surgeon, detailed for duty on Army Retiring Board, to meet at Vancouver Bks., W. T., at the call of the President thereof. Par. 22, S. O. 292, A. G. O., Washington, D. C., December 15, 1888.

By direction of the Secretary of War, First Lieut. Nathan S. Jarvis, Asst. Surgeon, is relieved from duty at Ft. Leavenworth, Kan., and will report to commanding officer, Ft. Lewis, Col., for duty. Par. 14, S. O. 290, A. G. O., Washington, December 13, 1888.

Capt. Louis A. La Garde, Asst. Surgeon, is granted leave of absence for one month, with permission to apply for an extension of three months. Par. 15, S. O. 290, A. G. O., Washington, December 13, 1888.

Capt. William E. Hopkins, Asst. Surgeon, is detailed as member of the Army Retiring Board to meet at San Francisco, Cal., vice Major Henry E. Tilton, Surgeon relieved. Par 3, S. O. 294, A. G. O., Washington, December 18, 1888.

Capt. William F. Carter, Asst. Surgeon, leave of absence granted in S. O. 116, Dept. of Texas, November 12, 1888, is extended five months, by direction of the Secretary of War. Par. 4, S. O. 292, A. G. O., Washington, December 15, 1888.

Capt. George McCreery, Asst. Surgeon, is granted leave of absence for one month. Par. 4, S. O. 265, Hdqrs. Div. of Atlantic, Governor's Island, N. Y., December 15, 1888.

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